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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,207	02/26/2002	Ben-Chuan Du	742433-0026	4668
36716	7590	04/26/2005		EXAMINER
LADAS & PARRY				NGUYEN, LAM S
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LOS ANGELES, CA 90036-5679			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/082,207	DU ET AL. 
	Examiner	Art Unit
	LAM S. NGUYEN	2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 22 February 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 15-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 15-37 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 22 February 2005 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 15-16, 18-21, 23-26, 28-34, and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (US 5914731) in view of Logan et al. (US 4575730).

Yano et al. discloses a printing apparatus comprising a print head for scanning over a printing medium, said print head comprising a printing element set comprising M printing elements for selectively forming images on said printing medium, wherein M is a positive integer (*FIG. 26: M is 128 heaters*);

a timing device for, in response to a reference timing sequence (*FIG. 28, S112: A basic driving pulse is used as a timing reference*) and a random value series (*FIG. 28, S113: The random value series is 16 random numbers from the random number table*) generating N sets of driving timing sequences (*FIG. 26, step S114-115: 16 timing sequences each represents a heat signal provided to one of 16 heaters*), said random value series including N random values, each of the N sets of driving timing sequence being obtained by shifting said reference timing sequence with corresponding one of N random values (*FIG. 28: Each set of heat signal H1 to H16 in step S114 is derived/shifted from the basic driving pulse in step S112 and the random number in step*

*S113), wherein N is a positive integer (FIG. 28, S113: N = 16) (Referring to claims 25, 33); and*

*a driving device for, in response to said N sets of driving timing sequences, forming said dot image (FIG. 26-28: The heat signals H1-H16 drives the heaters during the printing operation), wherein each set of driving timing sequences sequentially drives the M printing elements (FIG. 26: The heat signals H1-H16 sequentially drive the 128 heaters ) to provide random distances between consecutive dot images formed by the printing element set of the printing head (FIG. 29: Because the consecutive dots are printed under random dot size control, the spaces (or the boundary-to-boundary distances) between the consecutive dots are also randomly changed) so a cyclic unevenness of said image is scattered (column 2, lines 33-38: When the dot size is randomly changed, the white/black stripe-shaped can be eliminated).*

Yano et al. does not disclose wherein the random distance is a distance between centers of consecutive dot images.

Logan et al. discloses an ink jet printing device for forming images by printing dot images on a printing medium, wherein the distance between centers of consecutive dot images is varied randomly (*Abstract and FIG. 5C: Since the print dots are printed at positions randomly deviated vertically, the distance between centers of consecutive dots is varied randomly*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the printing apparatus disclosed by Yano et al. to randomly change the distance between centers of consecutive dot images as disclosed by Logan et al. The motivation for doing so would have been to substantially eliminate the

corduroy texture appearance that is produced by the repetitive lighter gaps between adjacent printed lines as taught by Logan et al. (*column 1, lines 60-64*).

**Yano et al. also discloses the following claimed invention:**

**Referring to claims 16, 21, 26, and 34:** wherein said timing device respectively adds N random values to said reference timing sequence to generate said N set of driving timing sequences (*column 18, lines 1-14*).

**Referring to claims 18, 29:** further comprising a unit for generating said random value series, said random value series being transmitted to said timing device via a transmission protocol (*FIG. 27, 30, element 1703 and FIG. 9, element 11*).

**Referring to claims 19, 23, 30, 37:** wherein said print head is an ink jet head to perform printing (*FIG. 3*).

**Referring to claims 28, 36:** wherein said random value sequence is composed of a set of numbers in random order (*column 18, lines 42-48*).

**Referring to claim 31:** wherein said printing elements are divided into multiple groups, said timing device generating a driving timing sequence for one group of printing elements by shifting the reference timing sequence with a random amount (*FIG. 26: 128 heaters are divided into 8 groups that are driven by the heat signals H1-H16*).

2. Claims 17, 22, 27, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (US 5914731) in view of Logan et al. (US 4575730), as applied to claims 15, 20, 24, 32, and further in view of Iwasaki et al. (US 6142598).

Yano et al., as modified, discloses the claimed invention as discussed above except wherein said timing device respectively multiplies N random values to said reference timing sequence to generate said N sets of driving timing sequences.

Iwasaki et al. discloses a printing apparatus in which printing elements are driven by a driving timing sequence that is generated by multiplying a reference timing sequence to a variation value sequence (*column 5, lines 5-49*) in order to eliminate the printed image unevenness that cyclically appears due to variations in the manufacturing errors (*Abstract*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the method of deriving the driving timing sequence as disclosed by Yano et al., as modified, by, instead of adding, multiplying the reference timing sequence to the random value sequence as disclosed by Iwasaki et al. The motivation of doing so is to eliminate the printed image unevenness that cyclically appears due to variations in the manufacturing errors as taught by Iwasaki et al. (*Abstract*).

#### ***Response to Arguments***

Applicant's arguments with respect to claims 15, 20, 24, and 32 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN  
April 20, 2005

*hai pham*  
HAI PHAM  
PRIMARY EXAMINER